

WHAT IS CLAIMED IS:

1. A semiconductor memory device comprising a memory cell capacitor for storing data thereon, the capacitor being made up of a first electrode connected to a contact plug, a second electrode and a capacitive insulating film interposed between the first and second electrodes,

wherein the first electrode includes a first barrier film in contact with the contact plug and a second barrier film, which is formed on the first barrier film and prevents the diffusion of oxygen, and

wherein the second barrier film covers the upper and side faces of the first barrier film.

2. The memory device of Claim 1, wherein the first barrier film includes a film that prevents a constituent element of the contact plug from diffusing into the capacitive insulating film.

3. The memory device of Claim 2, wherein the first barrier film includes a film selected from the group consisting of TiN, TiAlN, TiSiN, TaN, TaSiN and TaAlN films.

4. The memory device of Claim 3, wherein the first barrier film has upper and lower films and the lower film is made of Ti or Ta.

5. The memory device of Claim 2, wherein the second barrier film includes an Ir or IrO₂ film.

6. A semiconductor memory device comprising a memory cell capacitor for storing data thereon, the capacitor being made up of a first electrode connected to a contact plug, a second electrode and a capacitive insulating film interposed between the first and second electrodes,

wherein the first electrode includes a first barrier film in contact with the contact plug, a second barrier film covering the upper surface of the first barrier film and a third barrier film covering the side faces of the first barrier film, and

wherein the second and third barrier films prevent the diffusion of oxygen.

7. The memory device of Claim 6, wherein the first barrier film includes a film that prevents a constituent element of the contact plug from diffusing into the capacitive insulating film.

8. The memory device of Claim 7, wherein the first barrier film includes a film selected from the group consisting of TiN, TiAlN, TiSiN, TaN, TaSiN and TaAlN films.

See Spec
Fig. 2 -
discloses
3 layer
barrier
layer
electrode
022001

9. The memory device of Claim 8, wherein the first barrier film has upper and lower films and the lower film is made of Ti or Ta.

10. The memory device of Claim 7, wherein each of the second and third barrier films includes an Ir or IrO₂ film.

09785502 022001